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What are Asian carp?

There are three species of Asian carp that are considered invasive and a threat to the Great Lakes, the bighead, silver and black carp. Silver and bighead carp are filter-feeding fish and consume plant and animal plankton at an alarming rate. Bighead carp can grow to very large sizes of over five feet in length and can weigh 100 pounds or more. Black carp differ in that they consume primarily mollusks, and threaten native mussel and sturgeon populations. They can grow to seven feet in length and 150 pounds.

Where did Asian carp come from?

Asian carp were originally imported to the southern United States in the 1970s to help aquaculture and wastewater treatment facilities keep retention ponds clean. Flooding throughout the 1990's allowed these fish to escape into the Mississippi and migrate into the Missouri and Illinois rivers.

Why are they a problem in Illinois?

Asian carp are a problem because of their feeding and spawning habits.

Bighead carp are capable of consuming 40% of their own body weight in food each day. Silver carp are smaller, but pose a greater danger to recreational users because of their tendency to jump out of the water when disturbed by boat motors. They have severely impacted fishing and recreation on the Illinois River. They can spawn multiple times during each season and quickly out-compete native species by disrupting the food chain everywhere they go.

Click the link to see how they have devastated the Illinois River.

<http://www.youtube.com/watch?v=yS7zkTnQVaM>

What happens if Asian carp enter the Great Lakes?

Asian carp could have a devastating effect on the Great Lakes ecosystem and a significant economic impact on the \$7 billion fishery. Once in Lake Michigan, this invasive species could access many new tributaries connected to the Great Lakes. These fish aggressively compete with native commercial and sport fish for food. They are well suited to the water temperature, food supply, and lack of predators of the Great Lakes and could quickly become the dominant species. Once in the lake, it would be very difficult to control them.

Where are the Asian carp now?

During 2002 monitoring efforts, Asian carp were detected in the upper Illinois River, just 60 miles from Lake Michigan. In 2009, by using a new method called eDNA testing, silver carp were detected considerably closer, within the Lockport Pool (Des Plaines River, and I&M Canal).

What is eDNA testing/How does it work?

Environmental DNA testing (eDNA) was developed at the University of Notre Dame to improve monitoring of invasive species. All fish, including Asian carp, release DNA into the environment. The presence of individual species can be detected by filtering water samples, and then extracting and amplifying short fragments of the shed DNA.

The objective is to use eDNA testing as an early detection tool to identify Asian carp locations. For more information on eDNA testing click the link below.

http://www.lrc.usace.army.mil/pao/eDNA_FactSheet_20090918.pdf

Why have no actual Asian carp been found in the areas where eDNA testing has identified them?

Asian carp are still below a threshold of detection using traditional fishing gear. Electro-fishing is successful in detecting bighead and silver carp when they are in high abundance. The Chicago Sanitary and Ship Canal is, in some places, nearly 30 feet deep, which is another disadvantage to using traditional sampling methods. In the early spring and late fall, the water is cooler and produces less algae (a main food source of bighead and silver carp diets), and the fish tend to reside a bit deeper than they would during warmer months. With decreased metabolism (not as much food), they are also less active and therefore harder to detect.

How would the fish enter Lake Michigan?

The Chicago Sanitary and Ship Canal (CSSC) is a manmade waterway that provides a direct connection between the Mississippi River system and Lake Michigan. eDNA sampling suggests that the carp are already about a mile from the electric barrier located within the CSSC that is designed to deter them from advancing through the canal to Lake Michigan.

Are there other navigation points for fish to swim around the electric barrier?

Other points of possible entry to the CSSC above the electric barrier are the low lying areas of land positioned between the Des Plaines River, the Illinois and Michigan (I&M) Canal and the Chicago Sanitary and Ship Canal. During heavy rainfall events, these areas are prone to flooding. A significant rain could flood the banks, joining the Des Plaines with the CSSC or the I & M canal with the CSSC, and allowing these fish to bypass the barrier and advance toward Lake Michigan. The U.S. Army Corps of Engineers and others are currently investigating potential solutions to these bypass issues.

Why are you taking this action now?

Like all mechanical devices, the barrier system requires periodic maintenance. Barrier IIA is scheduled to undergo routine maintenance every four to six months. The last maintenance was done in April 2009 when Barrier IIA was put into full time operation.

How can the public help prevent the spread of Asian carp?

- Don't move live fish from one location to another. Illinois state law prohibits the transport of live Asian carp.
- Never use wild-caught baitfish in waters other than where they came from.
- Know the difference between juvenile Asian carp and Juvenile Gizzard Shad which look nearly identical.
- Drain lake or river water from live wells and bilges before leaving any body of water.

What steps are being taken to prevent them from entering the Great Lakes?

- A group of biologist and response professionals including representatives of the U.S. Army Corp of Engineers, U.S. Fish and Wildlife Service, U.S Coast Guard, U.S. Environmental Protection Agency, the Illinois Environmental Protection Agency and the Illinois Department of Natural Resources are finalizing a response plan to address the potential immediate threat as well as more permanent long term solutions.
- The U.S. Army Corps of Engineers (USACE) has installed two electric barriers in the CSSC to help repel the carp. A third barrier is scheduled to be complete in 2010.

- Asian Carp eDNA monitoring has been conducted by the University of Notre Dame and the U.S. Army Corps of Engineers on the Des Plaines River, CSSC, I&M Channel and the Chicago River.
- Fisheries biologists from state and federal agencies have increased their efforts to locate the fish using traditional fishing gear and electro-fishing methods.
- A fish toxicant called Rotenone will be applied to the CSSC while the Electric Barrier is down for routine maintenance in November.
- The Rapid Response Team is analyzing where the low water spots on the Des Plaines and the I & M canal are located and where the bypasses to the electric barrier occur.

What is rotenone?

Rotenone is a natural substance derived from the roots of several tropical and subtropical plants in the bean family. Use of this toxicant in North America began in the 1930s in ponds and lakes as a tool to sample fish populations or to completely eradicate undesirable fish populations. Rotenone is approved for fishery uses by the U.S. Environmental Protection Agency (USEPA).

a. How does it work?

Rotenone affects all species of fish, although susceptibility to the chemical varies between species. The chemical inhibits a biochemical process at the cellular level making it impossible for fish to use oxygen in the release of energy needed for body processes. Rotenone is non-persistent, so there is no accumulation in the water, soil, plants or surviving animals. The breakdown process is very rapid. Ultimately, rotenone breaks down into carbon dioxide and water, two common substances.

b. What are the benefits to using rotenone?

There are many reasons why using rotenone is the logical choice to prevent the movement of Asian Carp.

- The use of Rotenone provides the highest level of certainty that Asian carp will not advance past the electric barrier while it is shut down temporarily for routine maintenance.
- Traditional fishing gear may not work. Silver carp are very good at avoiding nets and the extensive navigational traffic in the canal makes using nets for bighead carp ineffective.
- Nets would not remove all the fish and may miss the juveniles, which are of particular concern.
- The International Joint Commission funded an Asian carp sensitivity project at the U.S. Geological Survey Laboratory in Columbia, Missouri. Researchers determined that Asian carp are more sensitive to rotenone than to other chemicals that were tested.
- The overall quality of the fishery in the canal will improve by eliminating many undesirable species of fish and restocking in the future will improve the fishery.

c. What does recent research say about the use of Rotenone in fisheries management?

In 2007 the U.S. EPA completed a thorough evaluation of the human health and ecological risks associated with rotenone. In that evaluation, EPA concluded that rotenone could be used safely for fish management if used properly.

- In situations where treated water is likely to move outside of the direct area of application, rotenone must be deactivated with a chemical agent (typically

potassium permanganate) to ensure that fish and aquatic life outside the treatment area will not be adversely affected.

- Applicators must post signs at access points to the affected area to prohibit recreational access during treatment, prohibit swimming for at least three days following treatment, and prohibit consumption of dead fish taken from the treated area.

For more information on the EPA evaluation, you can visit the following website.

http://www.epa.gov/oppsrrd1/REDs/rotenone_red.pdf.

What other options were considered besides rotenone ?

Many options have been considered including heating the water, capturing the fish with nets, herding the fish with noise or lights and trapping them, using explosives, removing oxygen from the water, increasing the flow at the lock, and sonic disruption. It was determined that the most effective option to control the spread of Asian carp is the use of rotenone in a 5.7 mile section of the canal between Lockport and Romeoville (where the electric barrier is located). The rotenone will eradicate Asian carp and other fish, only in that confined section of the canal. The treatment area is an optimal location because there are no tributaries and it is below the confluence of the Cal-Sag Channel and Sanitary and Ship Canal.

What are the risks of rotenone to people working on or living near the river?

The treatment will not pose any short or long term risk to people or pets. It is safe for other animals, except swine, to consume the fish. Scavengers and birds that eat any floating fish will not be adversely affected. The Canal will be closed during and after the application period to ensure the safety of workers applying the chemical and to avoid potential hazards posed by collision with any of the vessels used to apply the toxicant.

Have similar rotenone applications been successful?

Yes. Rotenone is commonly used for fish management purposes in Illinois and many other states. The Illinois Department of Natural Resources has more than 40 years experience using rotenone in lakes and streams. It is used annually in Illinois on an average of 65 lakes totaling 475 acres of water.

If Rotenone is used, will it kill other living things besides Asian carp?

Yes. Rotenone affects all gill-breathing organisms. In general, most common aquatic invertebrates are less sensitive to rotenone than fish. There are currently no toxicants that affect only Asian Carp. If used correctly rotenone does not pose human health hazards or significant detrimental effects to domestic animals, other wildlife, and aquatic or terrestrial vegetation.

What is being done to mitigate effects on wildlife?

- While the majority of fish in the treatment area are mainly considered rough, undesirable fish The Illinois Department of Natural Resources (IDNR) will conduct electro-fishing operations prior to the rotenone application to remove sport fish that may be present before application. Any desirable fish caught will be relocated outside the treatment area.
- The IDNR will accelerate the detoxification process by adding potassium permanganate to the water once treatment is complete.
- The area will be restocked with more desirable fish in the future, improving the overall quality of fish in the area.

Is rotenone harmful to humans?

If used correctly rotenone does not pose human health hazards.

a. Can the chemical get into public drinking water systems?

No. The nearest public drinking water system downstream is 125 miles from the CSSC.

b. Is it safe to eat fish affected by rotenone?

USEPA recommends collecting and burying fish killed by rotenone. The label specifically prohibits the consumption of treated fish.

c. When will it be safe to eat fish from the river again?

As soon as the canal has been detoxified fish will be safe to eat. Rotenone detoxifies at a rapid rate. Potassium permanganate will also be added to the treated water to accelerate the detoxification process.

When will the Chicago Sanitary and Ship Canal (CSSC) be closed, and for how long?

The CSSC will be closed to all traffic beginning on December 2, 2009 (weather permitting) and will stay closed for a period of 4-5 days.